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THE ELECTRIFICATION OF THE AUSTRIAN FEDERAL RAILROADS

The following information is taken from a report of the Austrian National Committee given at the Fourth World Power Conference in London in 1949, and entitled "The Sources and Development of Austria's Supply of Energy." The report was compiled by O. Ruiss and O. Vas and was reprinted in condensed form in Oesterreichische Zeitschrift fuer Elektrizitaetswirtschaft, Vol III, No 8, Vienna, August 1950.

The progress of electrification of the standard-gauge lines may be seen in Tables 1 and 2; these show the lengths of the electrified stretches in operation, the haulage, and the specific and annual consumption of power by the railroad network of the Austrian Federal Railroads.

Table 1. Electrified Stretches of the Austrian Federal Railroads

Year	Length (km)	Remarks
1922	222	Year before the completion of the first stretch built under the first large-scale electrification plan
1930	841	Year of completion of the first large-scale electrification plan
1937	918	Last business year of the old Austrian Federal Railroads
1945	976	First business year of the present Austrian Federal Railroads
1948	976	In operation
1949	121	Under construction (of this, the Attnang - Linz stretch is already in operation)

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Table 2. Haulage and Power Consumption of the Austrian Federal Railroads

E - Electrically run section of the network
D - Steam- or diesel-run section of the network
N - Total network

NK - Normal coal, 4,400 kilocalories/kilogram
Btkm - gross ton-kilometer

Year	Haulage per Km of Railroad Section (million gross tons) E	D	N	Power Consumption (10^6 kw-hr)	Power Consumption per Km of Railroad Section E (10^3 kw-hr/km NK)	D (tons/km NK)	Specific Power Consumption E (kw-hr/10^3 Btkm)	D (kg NK/10^3 Btkm)
1929*	2.43	2.00	2.04	113.7	143	428	58.9	148
1933**	2.53	1.90	2.00	126.6	158	266	56.5	140
1937	3.22	2.43	2.55	170.7	186	282	57.2	116
1946	3.44	1.34	1.58	179.7	134	248	53.5	187
1947	4.25	1.66	2.08	211.9	217	265	51.1	160
1948	5.21	2.40	2.86	251.1	257	313	49.1	131

* Year of heaviest traffic before the depression

** Year of lightest traffic during the depression

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The railroad electric network (Bahnverbundnetz) is supplied by five railroad-owned hydroelectric power plants with a total output of 96 megawatts and two independent hydroelectric power plants producing 19 megawatts railroad current in railroad-owned generators. From the railroad "Verbund" network (combined power supply system), the Austrian Federal Railroads obtain almost all their requirement of electric power. Two additional railroad-owned hydroelectric power plants now under construction will raise the attainable peak production by 53.7 megawatts.

Table 3 gives a survey of the output of the plants in production and under construction as follows:

Table 3. Annual Output in Normal Years
(million kw-hr)

	Summer Output	Winter Output	Annual Output	Of This, Reservoir Energy	Of This, Runoff Energy	Winter Output in Dry Years
In operation	204	[illegible]	330	111.4	218.6	110.0
Under construction	103	47	150	20.5	137.5	42.0

All the power plants generating railroad current, with the exception of the Steg power plant, are interconnected by 55- or 110-kilovolt transmission lines with a total length of 690 kilometers. The 14 transformer substations which feed the railroad lines directly are attached to these connecting lines and contain altogether 44 main transformers with a continuous load output of about 150,000 kilovolt-amperes.

The coal consumption of the Austrian Federal Railroads in selected years and the coal saved through electrification of the Federal Railroads (coal which would be necessary if the electrified stretches were still trafficked by steam-driven trains) are as follows:

Table 4.

Year	Coal Consumption of the Austrian Federal Railroad (1,000 tons)	Quantity of coal (SK, normal coal) saved through electrification (1,000 tons)
1929*	2,162	236
1933**	1,792	336
1937	1,913	347
1946	1,967	626
1947	1,951	664
1948	1,994	769

* Year of heaviest traffic before the depression

** Year of lightest traffic during the depression

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